

What is claimed is

- 1 1. An electrical connector comprising:
 - 2 a) a plurality of electrical conductors, each electrical conductor having a
 - 3 contact tail, an intermediate portion, a compliant portion and a contact
 - 4 portion;
 - 5 b) a first housing, with the intermediate portion of each of the plurality of
 - 6 electrical conductors attached to the first housing;
 - 7 c) a second housing, with the contact portions of each of the plurality
 - 8 electrical conductors attached to the second housing; and
 - 9 d) a compliant coupling between the first housing and the second housing.
- 1 2. The electrical connector of claim 1 wherein each of the compliant portions
- 2 comprises an elongated segment with bends therein.
- 1 3. The electrical connector of claim 2 wherein each of the compliant portions
- 2 includes a curve.
- 1 4. The electrical connector of claim 2 wherein each of the compliant portions
- 2 includes a plurality of curves.
- 1 5. The electrical connector of claim 4 wherein each of the compliant portions
- 2 includes two curves, curving in opposite directions.
- 1 6. The electrical connector of claim 1 wherein the first housing is an insulative
- 2 housing.
- 1 7. The electrical connector of claim 1 wherein the second housing has gathering
- 2 features formed therein.
- 1 8. The electrical connector of claim 7 wherein the gathering feature comprises at
- 2 least one tapered surface.
- 1 9. The electrical connector of claim 1 wherein the second housing has a plurality of
- 2 side walls bounding a mating area and the contact portions of each of the plurality
- 3 of electrical conductors is disposed within the mating area.

- 1 10. The electrical connector of claim 9 wherein the contact portions are disposed in
2 the mating area in a rectangular array having rows and columns and the electrical
3 connector further comprises a plurality of conducting plates disposed in parallel,
4 each plate being disposed between adjacent rows of contact portions.
- 1 11. The electrical connector of claim 10 wherein the second housing is an insulator.
- 1 12. The electrical connector of claim 1 wherein portions of the plurality of electrical
2 conductors are separate insulative portions to form subassemblies.
- 1 13. The electrical connector of claim 12 further comprising a first plurality of
2 conductive plates, each conductive plate having:
3 i) an intermediate portion attached to the insulative portion of a
4 subassembly;
5 ii) a plurality of contact tails extending from the intermediate portion of the
6 plate;
7 iii) a plurality of compliant portions having distal ends extending from the
8 intermediate portion of the plate;
9 iv) a plurality of contacts electrically connected to the distal ends of the
10 plurality of compliant portions, wherein the plurality of contacts is
11 attached to the second housing.
- 1 14. The electrical connector of claim 13 additionally comprising a second plurality of
2 conductive plates, each of the second plurality of conductive plates attached to the
3 second housing and at least one of the plurality of contacts on one of the first
4 plurality of conductive plates.
- 1 15. The electrical connector of claim 14 wherein each of the second plurality of
2 conductive plates is attached to one of the plurality of contacts on each of the first
3 plurality of conductive plates.
- 1 16. The electrical connector of claim 1 wherein the complaint coupling comprises at
2 least one recess in the first housing with a lip extending into the recess and a tab
3 projecting from the second housing, with the tab engaging the lip.

- 1 17. The electrical connector of claim 16 wherein the compliant coupling further
2 comprises a stop spaced apart from the tab.
- 1 18. The electrical connector of claim 1 wherein the compliant coupling comprises
2 means for allowing motion in the plane between the first housing and the second
3 housing while restraining motion along the line between the first housing and the
4 second housing.
- 1 19. An electrical connector comprising:
2 a) a plurality of subassemblies disposed side-by side, each subassembly
3 comprising:
4 i) a plurality of electrical conductors, each electrical conductor
5 having a contact tail, an intermediate portion, a compliant portion
6 and a contact portion;
7 ii) an insulative portion encapsulating the intermediate portions of the
8 electrical conductors with the compliant portions extending from
9 the insulative portion;
10 b) a cap receiving the contact portions of the plurality of subassemblies and
11 holding the contact portions, with the compliant portions extending from
12 the insulative portion, whereby the cap may move relative to the insulative
13 portions of the subassemblies.
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- 1 20. The electrical connector of claim 19 wherein each of the subassemblies holds the
2 intermediate portions in a plane.
- 1 21. The electrical connector of claim 20 additionally comprising a shield member
2 attached to the insulative portion parallel to the plane of the intermediate portions.
- 1 22. The electrical connector of claim 21 wherein the shield member comprises an
2 intermediate portion adjacent the insulator, a plurality of compliant portions
3 extending from the intermediate portion and a forward portion attached to the cap.
- 1 23. The electrical connector of claim 22 wherein the forward portion has a plurality of
2 contacts thereon.

- 1 24. The electrical connector of claim 23 additionally comprising a plurality of second
2 type shields disposed within the cap, each of the second type shields connected to
3 at least one contact on a forward member of at least one subassembly.
- 1 25. The electrical connector of claim 19 wherein the compliant portions comprises an
2 elongated segment with bends formed therein.
- 1 26. The electrical connector of claim 25 wherein the bends comprise smooth curves.
- 1 27. The electrical connector of claim 26 wherein the bends comprise two smooth
2 curves, curving in opposite directions.
- 1 28. The electrical connector of claim 19 additionally comprising a housing receiving
2 at least a portion of the insulative portions of the plurality of subassemblies.
- 1 29. The electrical connector of claim 28 additionally comprising a compliant coupling
2 between the housing and the cap.
- 1 30. The electrical connector of claim 29 wherein the compliant coupling comprises
2 means for allowing motion in the plane between the housing and the cap.
- 1 31. The electrical connector of claim 29 wherein the compliant coupling comprises
2 means for allowing motion in the plane between the housing and the cap and
3 inhibiting motion along a line between the cap and the housing.
- 1 32. The electrical coupling of claim 29 wherein the compliant coupling comprises a
2 tab engaged under a lip.
- 1 33. The electrical connector of claim 19 forming a first connector in a matrix
2 assembly comprising a second connector, the second connector comprising:
3 a) a second plurality of subassemblies, each subassembly comprising:
4 i) a plurality of electrical conductors, each electrical conductor
5 having a contact tail, and intermediate portion and a contact
6 portion, the contact portion shaped to mate with a contact portion
7 of an electrical conductors in the first electrical connector;

- 8 ii) an insulative portion encapsulating the intermediate portions of the
- 9 electrical conductors with the contact portions extending from the
- 10 insulative portion; and
- 11 b) a housing receiving at least the contact portions of the plurality of
- 12 subassemblies, the housing having a mating face adapted to engage the cap
- 13 of the first connector.

1 34. The electrical connector of claim 33 wherein the cap comprises gathering features
2 whereby the mating face of the housing is guided into mating position relative to
3 the cap.

- 1 35. An electrical connector, adapted for use in a matrix assembly comprising:
- 2 a) a first plurality of wafers, each wafer comprising a column of signal
 - 3 contacts, each signal contact having an intermediate portion, a contact tail,
 - 4 and a mating portion, each of the wafers further having a insulative portion
 - 5 encapsulating the intermediate portions of the signal contacts;
 - 6 b) a first housing holding the wafers in parallel with the mating portions held
 - 7 in a first planar array;
 - 8 c) a second plurality of wafers, each wafer comprising a column of signal
 - 9 contacts, each signal contact having an intermediate portion, a contact tail,
 - 10 a mating portion and curved portion having at least two opposing curves
 - 11 joining the intermediate portion to the mating portion, each of the wafers
 - 12 further having a insulative portion encapsulating the intermediate portions
 - 13 of the signal contacts and leaving the curved portion un-encapsulated;
 - 14 b) a second housing holding the insulative portion of the second plurality of
 - 15 wafers in parallel;
 - 16 c) a cap connected to the contact portions of the second plurality of wafers,
 - 17 the cap holding the contact portions in a second planar array of dimensions
 - 18 matching the first planar array.